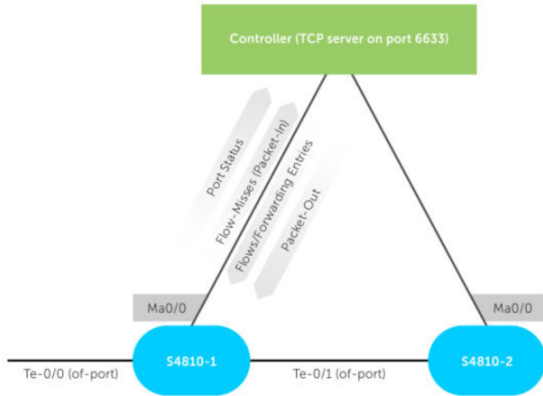# Exhibit 10

Illustrative Claim Chart for U.S. Patent No. 9,560,177

Claim 1	Exemplary Dell Switches
1. A switch apparatus, comprising:	The Exemplary Dell Switches include a switch apparatus that supports OpenFlow Software Defined Networking (SDN). *See, e.g.,* **Dell Networking MXL blade switch** For Dell M1000e blade enclosures Expand the value of your blade investment. The Dell Networking MXL blade switch delivers performance and scalability in a flexible package to meet the shifting demands of your business and data center as it transitions to 1/10/40GbE. https://i.dell.com/sites/csdocuments/Shared-Content_data-Sheets_Documents/en/SS804_Dell_Force10_MXL.pdf

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Claim 1	Exemplary Dell Switches
	## Overview In a software-defined network (SDN), an external controller cluster manages the network and the resources on each switch. OpenFlow is a protocol used for communication between the controller and the switch. In the example topology below, the controller uses the OpenFlow protocol to communicate with two S4810 switches. **Figure 1. OpenFlow Topology** *See* Dell OpenFlow Deployment and User Guide 4.0 ("Dell OpenFlow"), *available at* https://dl.dell.com/manuals/all-products/esuprt_ser_stor_net/esuprt_networking/esuprt_net_netwrkng_sw/force10-sw-defined-ntw_deployment%20guide4_en-us.pdf

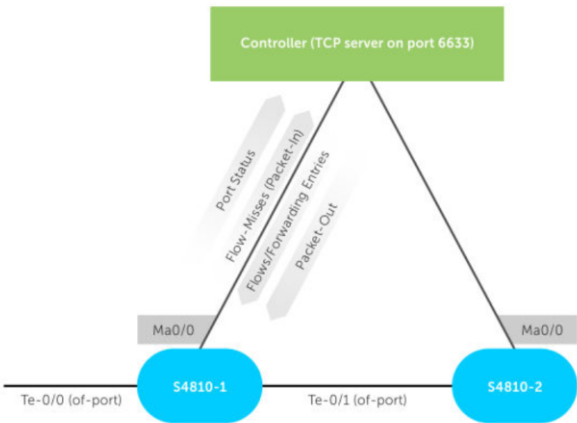| Claim 1	Exemplary Dell Switches
	OpenFlow 1.3 Support OpenFlow (OF) 1.3 [STD-1] is supported on the S4810, S4820T, S5000, S6000, Z9000, Z9500, and MXL switches. Dell Networking OS supports OpenFlow 1.3 message types. Although OpenFlow 1.3 is enabled, the OpenFlow 1.0 functionality is also supported. Additionally, the group flow and multipart message types features are supported. The multipart message types features replaces the statistics feature in OpenFlow 1.0 version. *Id.*
a storage storing a table, the table including rules and actions corresponding to the rules; and	The Exemplary Dell Switches supporting OpenFlow include a storage storing a table, the table including rules and actions corresponding to the rules. *See, e.g.,* **Port attributes** Up to 32 line-rate 10GbE KR ports 2 line-rate fixed 40GbE QSFP+ ports 2 optional FlexIO plug-in modules with flexible media choices: - 2-port QSFP+ 40GbE module - 4-port SFP+ 10GbE module - 4-port 10GBase-T 10GbE copper module (1/10Gb, only 1 module per MXL is supported) - 4-port 2/4/8Gb FC FlexIO module 1 USB (Type A) port for storage 1 USB (Type A) port for console/management **Performance** MAC addresses: 128K IPv4 routes: 16K Switch fabric capacity: 1.28Tbps (full-duplex) Forwarding capacity: 960Mpps Link aggregation: Up to 16 members per group, 128 LAG groups Queues per port: 4 queues VLANs: 4094 Line-rate Layer 2 switching: All protocols, including IPv4 Line-rate Layer 3 routing: IPv4 and IPv6 ACLs: 2K ingress, 1K egress Packet buffer memory: 9MB CPU memory: 2GB https://i.dell.com/sites/csdocuments/Shared-Content_data-Sheets_Documents/en/SS804_Dell_Force10_MXL.pdf

Claim 1	Exemplary Dell Switches
	For example, access control lists (ACLs) and forwarding tables are used to make flow-matching and routing decisions. ## Match Parameters and Supported Values Using OpenFlow, you can transmit the switch's ports and forwarding tables to the controller, allowing the controller to configure forwarding entries on the switch. OpenFlow also allows the controller to insert control packets through the switch and to redirect any missed flow packets from the switch to the controller. The flows in OpenFlow allow the switch to match based on the following parameters and values. The software forwards the match results out of one or more network ports, with the option to modify the packet headers. *See* Dell OpenFlow.
a controller comprising: a memory storing instructions;	The Exemplary Dell Switches supporting OpenFlow include a controller comprising a memory storing instructions. *See, e.g.,*

Claim 1	Exemplary Dell Switches
	## Overview In a software-defined network (SDN), an external controller cluster manages the network and the resources on each switch. OpenFlow is a protocol used for communication between the controller and the switch. In the example topology below, the controller uses the OpenFlow protocol to communicate with two S4810 switches. **Figure 1. OpenFlow Topology** *See* Dell OpenFlow.

Claim 1	Exemplary Dell Switches

	Port attributes
	Up to 32 line-rate 10GbE KR ports
	2 line-rate fixed 40GbE QSFP+ ports
	2 optional FlexIO plug-in modules with flexible media choices:
	     - 2-port QSFP+ 40GbE module
	     - 4-port SFP+ 10GbE module
	     - 4-port 10GBase-T 10GbE copper module
	     (1/10Gb, only 1 module per MXL is supported)
	     - 4-port 2/4/8Gb FC FlexIO module
	1 USB (Type A) port for storage
	1 USB (Type A) port for console/management
	Performance
	MAC addresses: 128K
	IPv4 routes: 16K
	Switch fabric capacity: 1.28Tbps (full-duplex)
	Forwarding capacity: 960Mpps
	Link aggregation: Up to 16 members
	        per group, 128 LAG groups
	Queues per port: 4 queues
	VLANs: 4094
	Line-rate Layer 2 switching: All protocols, including IPv4
	Line-rate Layer 3 routing: IPv4 and IPv6
	ACLs: 2K ingress, 1K egress
	Packet buffer memory: 9MB
	CPU memory: 2GB
	
	https://i.dell.com/sites/csdocuments/Shared-Content_data-Sheets_Documents/en/SS804_Dell_Force10_MXL.pdf
	
	See above.

and a processor configured to execute the instructions to:	The Exemplary Dell Switches supporting OpenFlow include a processor configured to execute instructions. *See, e.g.,*

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Claim 1	Exemplary Dell Switches
	## Overview In a software-defined network (SDN), an external controller cluster manages the network and the resources on each switch. OpenFlow is a protocol used for communication between the controller and the switch. In the example topology below, the controller uses the OpenFlow protocol to communicate with two S4810 switches. **Figure 1. OpenFlow Topology** *See* Dell OpenFlow.

Claim 1	Exemplary Dell Switches

	Port attributes Up to 32 line-rate 10GbE KR ports 2 line-rate fixed 40GbE QSFP+ ports 2 optional FlexIO plug-in modules with flexible media choices:
	        - 2-port QSFP+ 40GbE module
	        - 4-port SFP+ 10GbE module
	        - 4-port 10GBase-T 10GbE copper module
	        (1/10Gb, only 1 module per MXL is supported)
	        - 4-port 2/4/8Gb FC FlexIO module
	1 USB (Type A) port for storage
	1 USB (Type A) port for console/management
	Performance
	MAC addresses: 128K
	IPv4 routes: 16K
	Switch fabric capacity: 1.28Tbps (full-duplex)
	Forwarding capacity: 960Mpps
	Link aggregation: Up to 16 members
	                per group, 128 LAG groups
	
	Queues per port: 4 queues
	VLANs: 4094
	Line-rate Layer 2 switching: All protocols, including IPv4
	Line-rate Layer 3 routing: IPv4 and IPv6
	ACLs: 2K ingress, 1K egress
	Packet buffer memory: 9MB
	CPU memory: 2GB
	
	https://i.dell.com/sites/csdocuments/Shared-Content_data-Sheets_Documents/en/SS804_Dell_Force10_MXL.pdf
	
	See above.

receive the rules and the actions from a control apparatus;	The Exemplary Dell Switches supporting OpenFlow receive the rules and the actions from a control apparatus. *See, e.g.,*

Claim 1	Exemplary Dell Switches
	## Overview In a software-defined network (SDN), an external controller cluster manages the network and the resources on each switch. OpenFlow is a protocol used for communication between the controller and the switch. In the example topology below, the controller uses the OpenFlow protocol to communicate with two S4810 switches. **Figure 1. OpenFlow Topology** *See* Dell OpenFlow. For example, rules and actions are received from an OpenFlow controller (*e.g.*, TCP server on port 6633). *See* above.
identify, based on the rules, a received packet;	The Exemplary Dell Switches supporting OpenFlow identify, based on the rules, a received packet.

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Claim 1	Exemplary Dell Switches
	See, e.g., **OpenFlow 1.3 Support** OpenFlow (OF) 1.3 [STD-1] is supported on the S3048–ON, S3100 series, S4048–ON, S4048T-ON, S6100–ON, S6010–ON, S6000–ON, S4810, S4820T, S5000, S6000, Z9100, Z9500, FN IOM, and MXL switches. Dell Networking OS supports OpenFlow 1.3 message types. Although OpenFlow 1.3 is enabled, the OpenFlow 1.0 functionality is also supported. Additionally, the group flow and multipart message types features are supported. The multipart message types features replaces the statistics feature in OpenFlow 1.0 version. **Match Parameters and Supported Values** Using OpenFlow, you can transmit the switch's ports and forwarding tables to the controller, allowing the controller to configure forwarding entries on the switch. OpenFlow also allows the controller to insert control packets through the switch and to redirect any missed flow packets from the switch to the controller. The flows in OpenFlow allow the switch to match based on the following parameters and values. The software forwards the match results out of one or more network ports, with the option to modify the packet headers. *See* Dell OpenFlow. For example, packets are matched to flows, as described above. Packets not matching an existing flow may be forwarded to the OpenFlow Controller using the packet-in message. *See* above.
duplicate a part of a header of the identified packet as an additional header when the identified packet comprises a target of encapsulation;	The Exemplary Dell Switches supporting OpenFlow duplicate a part of a header of the identified packet as an additional header when the identified packet comprises a target of encapsulation. *See, e.g.,*

Claim 1	Exemplary Dell Switches
	Supported Flow Actions The following flow actions are supported: • `OFPAT_FLOOD` or `OFPAT_ALL`: Floods packets to all ports and VLANs on the OF interface. • `OFPAT_CONTROLLER`: Sends all `NO_MATCH` or `ACTION` packets to the controller specified by the packet's VLAN tag. • `OFPAT_out_port`: Displays a list of ports that can receive traffic. • `OFPAT_DROP`: Drops all packets that match the specified criteria. • `OFPXMT12_OFB_ETH_TYPE` — `Ethernet frame type` • `OFPXMT12_OFB_VLAN_PCP` — `VLAN priority` • `MODIFY FIELD` — `Set VLAN ID`: Assigns a VLAN ID (0 to 4094). • `MODIFY FIELD` - `Strip Vlan ID`: Strips VLAN ID from the packet. • `MODIFY FIELD` — `Set VLAN priority`: Assigns a priority to a VLAN (0 to 7). • `MODIFY FIELD` — `Modify Ethernet source MAC address`: Changes the Ethernet source MAC address to the specified value. • `MODIFY FIELD` — `Modify Ethernet destination MAC address`: Changes the Ethernet destination MAC address to the specified value. • `MODIFY FIELD` — `Modify IPv4 ToS bits`: Changes the IPv4 ToS in the packet header to the specified value. • `OFPAT_ENQUEUE`: Send the specified flow to the queue. ⓘ **NOTE: If there is a conflict between actions, the action with the higher priority takes precedence.** *See* Dell OpenFlow. For example, OpenFlow supports a "push-tag" operation where a new VLAN header can be added to the packet. The VLAN header is inserted immediately after the Ethernet header. The fields of the VLAN header are copied or duplicated from existing outer header fields, as shown below:

Claim 1	Exemplary Dell Switches
	<table>

Action	Associated Data	Description
Push VLAN header	Ethertype	Push a new VLAN header onto the packet. The Ethertype is used as the Ethertype for the tag. Only Ethertype 0x8100 and 0x88a8 should be used.
Pop VLAN header	-	Pop the outer-most VLAN header from the packet.
Push MPLS header	Ethertype	Push a new MPLS shim header onto the packet. The Ethertype is used as the Ethertype for the tag. Only Ethertype 0x8847 and 0x8848 should be used.
Pop MPLS header	Ethertype	Pop the outer-most MPLS tag or shim header from the packet. The Ethertype is used as the Ethertype for the resulting packet (Ethertype for the MPLS payload).
Push PBB header	Ethertype	Push a new PBB service instance header (I-TAG TCI) onto the packet (see A.2.5). The Ethertype is used as the Ethertype for the tag. Only Ethertype 0x88E7 should be used.
Pop PBB header	-	Pop the outer-most PBB service instance header (I-TAG TCI) from the packet (see A.2.5).

Table 6: Push/pop tag actions.

5.12.1   Default values for fields on push

Field values for all fields specified in Table 8 should be copied from existing outer headers to new outer headers when executing a push action. New fields listed in Table 8 without corresponding existing fields should be set to zero. Fields that cannot be modified via OpenFlow set-field actions should be initialized to appropriate protocol values.

New Fields		Existing Field(s)
VLAN ID	←	VLAN ID
VLAN priority	←	VLAN priority
MPLS label	←	MPLS label
MPLS traffic class	←	MPLS traffic class
MPLS TTL	←	$\begin{cases} \text{MPLS TTL} \\ \text{IP TTL} \end{cases}$
PBB I-SID	←	PBB I-SID
PBB I-PCP	←	VLAN PCP
PBB C-DA	←	ETH DST
PBB C-SA	←	ETH SRC

Table 8: Existing fields that may be copied into new fields on a push action.

Fields in new headers may be overridden by specifying a "set" action for the appropriate field(s) after the push operation.

See OpenFlow Switch Specification (Version 1.3.0), §§ 5.12 & 5.12.1.

Claim 1	Exemplary Dell Switches
encapsulate the identified packet by the additional header; and	The Exemplary Dell Switches supporting OpenFlow encapsulate the identified packet by the additional header; and process, based on the actions, the identified packet. *See, e.g.,* **Supported Flow Actions** The following flow actions are supported: · `OFPAT_FLOOD` or `OFPAT_ALL`: Floods packets to all ports and VLANs on the OF interface. · `OFPAT_CONTROLLER`: Sends all `NO_MATCH` or `ACTION` packets to the controller specified by the packet's VLAN tag. · `OFPAT_out_port`: Displays a list of ports that can receive traffic. · `OFPAT_DROP`: Drops all packets that match the specified criteria. · `OFPXMT12_OFB_ETH_TYPE — Ethernet frame type` · `OFPXMT12_OFB_VLAN_PCP — VLAN priority` · `MODIFY FIELD — Set VLAN ID`: Assigns a VLAN ID (0 to 4094). · `MODIFY FIELD - Strip Vlan ID`: Strips VLAN ID from the packet. · `MODIFY FIELD — Set VLAN priority`: Assigns a priority to a VLAN (0 to 7). · `MODIFY FIELD — Modify Ethernet source MAC address`: Changes the Ethernet source MAC address to the specified value. · `MODIFY FIELD — Modify Ethernet destination MAC address`: Changes the Ethernet destination MAC address to the specified value. · `MODIFY FIELD — Modify IPv4 ToS bits`: Changes the IPv4 ToS in the packet header to the specified value. · `OFPAT_ENQUEUE`: Send the specified flow to the queue. ⓘ NOTE: If there is a conflict between actions, the action with the higher priority takes precedence. *See* Dell OpenFlow.

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Claim 1	Exemplary Dell Switches
	<table><tr><th>Action</th><th>Associated Data</th><th>Description</th></tr><tr><td>Push VLAN header</td><td>Ethertype</td><td>Push a new VLAN header onto the packet. The Ethertype is used as the Ethertype for the tag. Only Ethertype 0x8100 and 0x88a8 should be used.</td></tr><tr><td>Pop VLAN header</td><td>-</td><td>Pop the outer-most VLAN header from the packet.</td></tr><tr><td>Push MPLS header</td><td>Ethertype</td><td>Push a new MPLS shim header onto the packet. The Ethertype is used as the Ethertype for the tag. Only Ethertype 0x8847 and 0x8848 should be used.</td></tr><tr><td>Pop MPLS header</td><td>Ethertype</td><td>Pop the outer-most MPLS tag or shim header from the packet. The Ethertype is used as the Ethertype for the resulting packet (Ethertype for the MPLS payload).</td></tr><tr><td>Push PBB header</td><td>Ethertype</td><td>Push a new PBB service instance header (I-TAG TCI) onto the packet (see A.2.5). The Ethertype is used as the Ethertype for the tag. Only Ethertype 0x88E7 should be used.</td></tr><tr><td>Pop PBB header</td><td>-</td><td>Pop the outer-most PBB service instance header (I-TAG TCI) from the packet (see A.2.5).</td></tr></table> Table 6: Push/pop tag actions. Newly pushed tags should *always* be inserted as the outermost tag in the outermost valid location for that tag. When a new VLAN tag is pushed, it should be the outermost tag inserted, immediately after the Ethernet header and before other tags. Likewise, when a new MPLS tag is pushed, it should be the outermost tag inserted, immediately after the Ethernet header and before other tags. When multiple push actions are added to the action set of the packet, they apply to the packet in the order defined by the action set rules, first MPLS, then PBB, than VLAN (se 5.10). When multiple push actions are included in an action list, they apply to the packet in the list order (see 5.11). *See* OpenFlow Switch Specification (Version 1.3.0), §§ 5.12 & 5.12.1. *See* above.
process, based on the actions, the identified packet.	The Exemplary Dell Switches supporting OpenFlow process, based on the actions, the identified packet. *See, e.g.,*

Claim 1	Exemplary Dell Switches
	Supported Flow Actions The following flow actions are supported: · `OFPAT_FLOOD` or `OFPAT_ALL`: Floods packets to all ports and VLANs on the OF interface. · `OFPAT_CONTROLLER`: Sends all `NO_MATCH` or `ACTION` packets to the controller specified by the packet's VLAN tag. · `OFPAT_out_port`: Displays a list of ports that can receive traffic. · `OFPAT_DROP`: Drops all packets that match the specified criteria. · `OFPXMT12_OFB_ETH_TYPE — Ethernet frame type` · `OFPXMT12_OFB_VLAN_PCP — VLAN priority` · `MODIFY FIELD — Set VLAN ID`: Assigns a VLAN ID (0 to 4094). · `MODIFY FIELD - Strip Vlan ID`: Strips VLAN ID from the packet. · `MODIFY FIELD — Set VLAN priority`: Assigns a priority to a VLAN (0 to 7). · `MODIFY FIELD — Modify Ethernet source MAC address`: Changes the Ethernet source MAC address to the specified value. · `MODIFY FIELD — Modify Ethernet destination MAC address`: Changes the Ethernet destination MAC address to the specified value. · `MODIFY FIELD — Modify IPv4 ToS bits`: Changes the IPv4 ToS in the packet header to the specified value. · `OFPAT_ENQUEUE`: Send the specified flow to the queue. ⓘ **NOTE: If there is a conflict between actions, the action with the higher priority takes precedence.** *See* Dell OpenFlow. For example, actions are carried out as defined in Section 5.12 of the OpenFlow Specification ("Actions") in order to, *inter alia*, (i) forward packets to specified OpenFlow ports, (ii) set a queue id for a packet, (iii) drop a packet, (iv) process a packet through a specified group, or (v) push/pop tags, including the VLAN tags described above. *See* above.